Listing of the Claims:

1-12. (canceled)

13. (previously amended) A mobile unit receiver suitable for use in a wireless communication network, comprising:

a receiving section configured to receive from a transmitting station a wireless communication signal having a plurality of frames and a spread spectrum chirp navigation signal embedded in the communication signal in synchronization with said frames;

a synthesizer unit configured to generate a frequency signal;

a mixer having a first input port coupled to the receiving section, a second input port coupled to the synthesizer unit, and an output port outputting a wireless communication signal downconverted based on the frequency signal; and

a signal processor unit coupled to the mixer and configured to receive the downconverted signal output from the mixer, wherein the signal processor unit is configured to detect the embedded spread spectrum chirp navigation signal and to correlate it with a reference chirp signal to output a pseudorange measurement signal based on the correlation;

wherein the synthesizer unit is coupled to the signal processor unit and is configured to adjust the frequency signal based on the pseudorange measurement signal.

14. (previously amended) The mobile unit receiver of claim 13, wherein the signal processor unit comprises:

a chirp generator configured to generate the reference chirp signal based on timing of the frames in the communication signal;

a correlator connected to the chirp generator and configured to correlate the reference chirp signal with the spread spectrum chirp navigation signal embedded in the wireless communication signal and output a correlation signal; and

an arrival time estimator configured to output a pseudorange value based on the correlation signal.

15. (original) The mobile unit receiver of claim 14, further comprising a filter connected to the output port of the mixer and the signal processor unit, and configured to filter the downconverted signal based on a frequency band corresponding to a plurality of the frames of the communication signal.

16. (canceled)

17. (previously amended) The mobile unit receiver of claim 14, further comprising a filter connected to the output port of the mixer and the signal processor unit, and configured to filter the downconverted signal based on a frequency band corresponding to a single frame of the communication signal.

18. (currently amended) A mobile unit receiver suitable for use in a wireless communication network, comprising:

receiving means for receiving from a transmitting station a wireless communication signal having a communication signal with a plurality of frames and a spread spectrum chirp navigation signal embedded in the communication signal in synchronization with said frames;

synthesizer means for generating a frequency signal;

downconverting means for downconverting a frequency of a wireless communication signal based on with a frequency signal; and

processing means for detecting the embedded navigation signal in the downconverted wireless communication signal and determining a pseudorange measurement based on the detected embedded navigation signal, wherein the processing means comprises:

chirp generator means for generating a reference chirp signal based on timing of the frames in the communication signal;

correlator means for correlating the reference chirp signal with the downconverted wireless communication signal and outputting a correlation signal; and

means for estimating an arrival time of the communication signal based on the correlation signal by correlating the wireless communication with said reference chirp signal and outputting a pseudorange value based on the correlation signal;

wherein said synthesizer means adjusts the frequency signal based on the pseudorange value.

19-28 (canceled)

29. (previously amended) A method of determining a location of a mobile unit in a communication system, the method comprising:

extracting a chirp spread spectrum signal from a communication signal that includes a frame having a plurality of slots broadcast from a transmitter, wherein the chirp spread spectrum signal is embedded within the frame and synchronized with a frame structure of the communication signal, said extracting comprises extracting the chirp spread spectrum signal only during slots that are not used for transmission or reception of the communication signal;

determining a pseudorange measurement between the mobile unit and the transmitter based on the extracted chirp spread spectrum signals; and

determining a location of the mobile unit based on the pseudorange measurement.

30. (canceled)

31. (previously amended) The method of claim 29, wherein extracting comprises correlating the received chirp spread spectrum signal with a local reference chirp spread spectrum signal over an observation period corresponding to a plurality of time slots, and wherein the time base of the local reference chirp spread spectrum signal is derived from the communication signal without reference to an external timing source.

32. (previously amended) The method of claim 31, wherein correlating comprises correlating on an individual time slot basis using a weighting coefficient for each time slot.

33. (previously amended) The method of claim 32, and further comprising determining said weighting coefficients based on measurements of noise and interference levels received during the time slots to maximize a signal-to-noise-plus-interference ratio of an accumulated correlation output.

34. (original) The method of claim 29, further comprising determining at the mobile unit a position of the mobile unit based on the pseudorange measurement and other range measurements.

35. (original) The method of claim 29, further comprising transmitting the pseudorange measurement to a location processing center for determining the position of the mobile unit.

36-37 (canceled)

38. (previously added) A method of determining a position of a mobile unit in a communication system, comprising:

(a) extracting from a received communication signal a spread spectrum chirp signal that includes a first chirp portion of a first sense and a second chirp portion of a second sense that is opposite to the first sense;

(b) determining a pseudorange measurement between the mobile unit and a transmitter that transmits the communication signal based on the spread spectrum chirp signal; and

(c) determining a position of the mobile unit based on the pseudorange measurement.

39. (previously added) The method of claim 38, wherein said extracting comprises extracting the chirp spread spectrum signal only during slots that are not used for transmission or reception by the mobile unit.

40. (previously added) The method of claim 38, wherein (a) extracting and (b) determining are performed for multiple instances of the spread spectrum chirp signal, and further comprising averaging pseudorange measurements taken from said multiple instances.

41. (previously added) The method of claim 40, and further comprising accumulating averages from pairs of instances of the spread spectrum chirp signal to remove noise and interference.

42. (previously added) The method of claim 38, wherein (a) extracting and (b) determining are performed with respect to a communication signal received from each of a plurality of transmitters to produce a plurality of pseudorange measurements, and wherein (c) determining comprises computing the position of the mobile unit based on the plurality of pseudorange measurements.